

Air Force Operational Test and Evaluation Center





AFOTEC Modeling & Simulation Accreditation Process

Herbert Morgan

AFOTEC/TSE

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AFOTEC ACCREDITATION PROCESS -- OVERVIEW



- **OT&E POLICY**
- **DoD M&S POLICY**
- **M&S in OT&E**
- **RECOMMENDED PRACTICES**
- **AFOTEC ACCR POLICY**
- **AFOTEC ACCR PROCESS**
- **SUMMARY**





OT&E POLICY



Title 10, US Code

- OT&E is
 - “the field test, under realistic combat conditions ... and the evaluation of the results of such test”
- OT&E is not
 - “based exclusively on computer modeling, simulation, or an analysis of ... information contained in program documents”



DoD M&S POLICY



DoDI 5000.2R

- **“Test planning shall consider M&S.”**
- **“Test results shall also be used to develop and improve models and simulations.”**
- **“When actual testing is not possible to support an operational assessment, such assessments may utilize computer modeling and/or hardware in the loop, simulations (preferably with real operators in the loop), or an analysis of information contained in key program documents ...”**



DOT&E M&S POLICY



DOT&E M&S Policy Letter

- **Test planning**
- **Data analysis and evaluation**
 - **Augment test results**
 - **Extend test results**
 - **Enhance test results**
- **Tactics development and employment techniques**
- **Early operational assessment of expected capabilities**



M&S IN OPERATIONAL TEST



OT

Real Environment

**Real
Test Item**

**Live
Simulation**



M&S IN OPERATIONAL TEST



OT

Real Environment

**Real
Test Item**

**Live
Simulation**

Possible OT

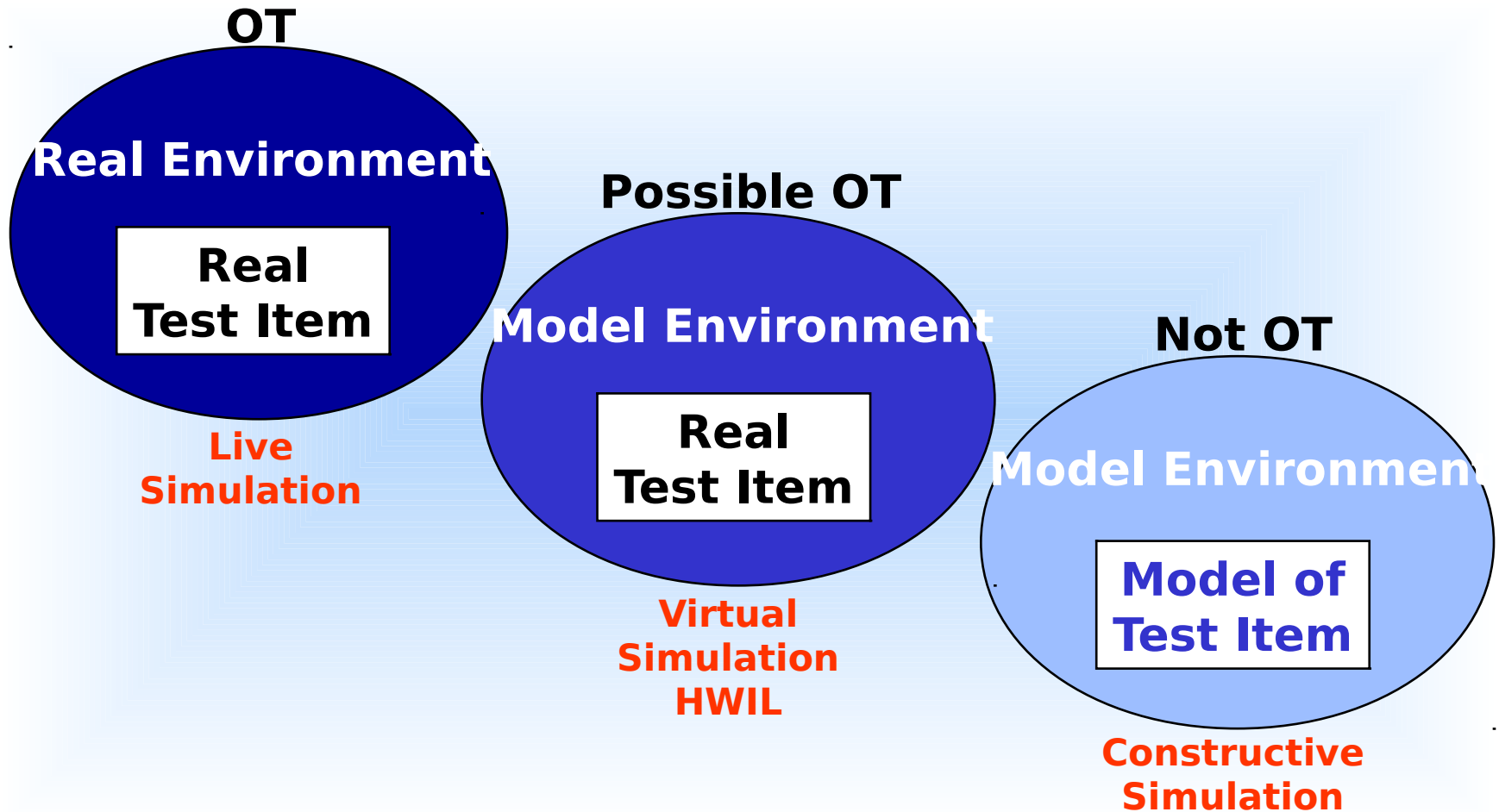
Model Environment

**Real
Test Item**

**Virtual
Simulation
HWIL**



M&S IN OPERATIONAL TESTS





CONSIDERATIONS



- **Process should closely tie VV&A to scope/cost and to test planning**
 - **Allow resource issues to be identified and worked earlier**
 - **Keep focus on the critical measures and the critical components of the measures**
 - **Accreditation should limit surprise results short term**
 - **Accreditation should improve processes in the long term**



CONSIDERATIONS



- **Process must be affordable and provide value**
- **Activities should be inherent to a good test design process**
- **Should allow for early identification of key factors that drive results**
 - **Can be a by-product of a facility trade study**
 - **Can be from previous experience**
 - **Can be from discussion within team**

“VV&A should not become a monster”-- CN



AFOTEC ACCREDITATION POLICY



- **Any Test Capability -- It's not just M&S anymore -- Applies to all models, simulations or other test capabilities**
 - Virtual & constructive M&S; HWIL/SWIL, HITL/MITL; OAR targets, threats or range simulations; data injectors & stimulators -- or federates
- **Whole Test Process -- Must consider everything required to answer a COI/MOE/MOP**
 - Test design, analysis procedures, test capabilities, & SUT interactions
- **All OT Flavors -- Will be accomplished in any OT effort using M&S/test capabilities to resolve a COI/MOE/MOP**
 - EOAs, OAs, OUEs, I/Q/F/MOT&Es
- **Integrated Team Effort -- Requires many experts working together**
 - Test manager, test team, analyst, test planner, as well as SMEs for SUT, facility, instrumentation, etc.



AFOTEC ACCREDITATION PROCESS -- VV&A



ACCREDITATION TEAM



- Guide Process
- Write Accr Plan
- Certify Data
- Ensure V&V
- Documentaⁿ

SENIOR MGMT REVIEWS

Yes /
No

- Approve Test Concept
- Approve Accr Approach
- Determine Accr Authority
- Approve Accr Plan
- Apprv Recommendation

VERIFICATION

*Ensuring the
TC / TP
Accurately
Represent
the
Developer's
Conceptual
Description
& Specs*

- Assumptions
- Data Sources
- Code/Process Walk-thru
- Preliminary Runs

Title 10

DoD 5000.2

DOT&E Guidance

AFI 16-1003

AFOTEC P 99-103

VALIDATION

*Ensuring the
TC / TP
Accurately
Represent
Real World,
Intended
Uses of the
SU*



- External Coordination
- Sensitivity Analyses
- Compare with Field Results

ACCREDITATION

*Management
Certification
That the TC /
TP Are
Acceptable
for a
Specified
Applicat*



- Team Recommend
- Det/Director's Coord
- CC/CN Accredit



ACCREDITATION PROCESS

ACCREDITATION PLANS & REPORTS FORMAT



- Title and Signature Page -- Use current format for AFOTEC test plans and reports.
- Executive Summary -- One page summary of pertinent points detailed in the following sections
- 1.0 System Background -- Brief description of the system and test program
- 2.0 Intended Uses of the Test Process and Associated Test Capability -- ***“What operational testing issue or question is being addressed?”*** -- State the intended uses for this OT&E and the specific metrics it will answer
- 3.0 Test Process Elements -- ***“What parts of the test process are most important to answering this issue or question?”*** -- Describe those elements of the test capability most important to its use (e.g., range setup requirements, data source and certification, validated CONOPS, verified simulation code, validated assumptions list, risk assessment)
- 4.0 Accreditation Approach and Supporting V&V Activities -- ***“What will be or has been done to ensure the test process is “good enough” for its intended use?”*** -- Describe V&V data and associated acceptance criteria; summarize of V&V activities to support accreditation decision
- 5.0 Limitations and Impacts -- ***“What are the limitation(s) of the test process and associated test capabilities, and the impacts on its intended use?”***



AFOTEC ACCREDITATION PROCESS -- SUMMARY



- **Implements intent of DoD and OT&E guidance**
- **Provides a framework for test process development**
- **Increases visibility to management**
- **Ensures credible, usable products in support of OT&E**

*“Good enough is the key in
V&V” -- CN*